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ABSTRACT

This paper examines the mechanics of argumentation, some features of computer conferencing software that might support this teaching and learning method (e.g., strategies for sharing, examining and commenting on various kinds of evidence, threading a conversation, indicating type of message, linking to outside information, highlighting new information, different methods for engaging in a conversation and retrieving a record of claims and assertions, security and privacy, and other technical aspects), types of appropriate assignments, and ways World Wide Web conferencing might be used in courses. (Author/MES)

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ARGUMENTATION ONLINE: THE USE OF COMPUTER CONFERENCING

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Abstract: The paper will examine the mechanics of argumentation, some features of computer conferencing software that might support this teaching and learning method (e.g., strategies for sharing, examining and commenting on various kinds of evidence, threading a conversation, indicating type of message, linking to outside information, highlighting new information, different methods for engaging in a conversation and retrieving a record of claims and assertions, security and privacy, and other technical aspects), types of appropriate assignments.And ways web conferencing might be used in courses.

Web conferencing has been touted as a vital component of distance education courses. A wide variety of inexpensive and free software is available for facilitating a discussion of a group online. The question is, "what are we using it for?" What type of interactions do we promote with our questions and assignments. What type of problem solving and critical thinking do we require from our students online, and how successful are we? Software features might facilitate higher level discussions, but we believe achieving this is a pedagogical issue more than a technical one. Web conferencing offers the opportunity for engaging students in arguments where they critically analyze and synthesize information to support a position, present that argument to others and defend their conclusions. These are important skills for both our education students and their present and future students.

The Technical Side of Web Conferencing

The Internet provides a channel for one to one and one to many communication between humans with the computer as a mediating device (Collins 1996). Synchroncusly, chat rooms, MUDs, MOOs, telephony and videoconferencing provide the ability for widely dispersed users to converse concurrently. While this has immediate feedback and social advantages, it can also produce disjointed, superficial threads of conversation and put those with poor typing or reading skills at a distinct disadvantage. Asynchronous modes of communication such as email, listservs, newsgroups, groupware, and web conferencing allow widely dispersed users to converse in a time-independent, self-paced, reflective manner with or without a structure built into the conversation. While this, too, can become disjointed and dragged out, it allows the user to review the structure and content of discussions and more time to reflect and compose their response.

Bulletin boards, newsgroups, and listservs have been in use for these online discussions for years. More recently, centralized forums designed specifically for group discussions, such as Web Board, Hotwired, HyperNews, First Class and Ceilidh, assign each message a place in a discussion structure. Workgroup collaboration software, such as LotusNotes, takes this one step further by providing computer-based systems that support groups of people engaged in a common task in a shared environment. These systems allow for both interactive communication and document sharing. It is these last two categories of software that provide the capabilities needed to carry out argumentation in an online environment.

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Skills in Argumentation

Students need skill in the process of argumentation to engage in critical thinking and persuasive writing, to understand and evaluate arguments in specific subject domains, to construct their own knowledge (Mason & Santi 1998) and to participate in socially constructed knowledge. Unfortunately, their arguments are often fallacious, based on invalid arguments, inadequate evidence, and representations of argument and evidence altered to accommodate naive argument structures and regression to core beliefs (Zeidler 1995).

Toulmin's six stage model of an argument includes claims, grounds, warrants, backing, qualifiers, and rebuttals (Toulmin et al 1979). To develop skill in using this model, students must have access to, and command over, the information resources and skills required to frame the research problem. They need to assess previous research and identify key issues, synthesize ideas and articulate their own hypothesis or claim. To support their claim or proposition, they need to gather evidence, identifying and evaluating sources, making observations and gathering, processing and evaluating data. This gathering of evidence may require a wide range of specific kinds of resources, expertise and software, depending on the domain of argument (Foote 1994).

Skill in identifying and communicating warrants and backing that support claims requires an understanding of the issues and the ability to reason with evidence. It needs articulate and convincing connections that may require databases, maps, graphs, charts, tables, (Foote 1994) video and sound as well as print. Analysis of expert versus student arguments shows students are weak in developing reasoning to connect their evidence to a claim through warrants and backing (Crammond 1998). At advanced levels, they need an understanding of both context and audience to use the expert's communication strategy of an implicit rather than explicit warrant. They need to be able to identify the most effective foundation for argumentative appeal and use reason, ethics and emotion (Paradigm) as well as specific skills, tools and multimedia resources to communicate in ways that support these approaches.

As students modulate an argument with qualifiers and rebuttals, they need to be able to access, evaluate and analyze a wide range of related information (Foote 1994). This is especially so if they are to anticipate opposition and exercise the more sophisticated countered-rebuttal strategies of expert argumentation. Inferential reasoning and powerful communication of qualifiers and countered-rebuttals of evidence and warrants demands facility with databases, simulations and statistics. In this process, skill in constructing and communicating probabilistic arguments is essential (Leeman 1987) and requires access to and command of such tools as statistical analysis and graphic expression.

Assignments Requiring Argumentation

To develop, evaluate, accept or refute arguments, students at all levels need experience in identifying, gathering, evaluating, organizing and presenting evidence to support claims. Traditionally, that has been done in the context of papers, oral reports, and debates. Students are asked to support their arguments before teachers and fellow students with, however, limited opportunity for critique and refutation. They learn to create a claim, gather evidence (factual or opinion), and test the reliability and validity of the evidence. As emerging technologies offer new forums for distributed learning, there is the very real concern that the context will impoverish pedagogy and diminish the quality of learning. We propose that they can do just the opposite when use is thoughtfully structured. Pedagogical methodologies for engaging students in argumentation online are needed on top of the simple technical capacity for carrying on asynchronous conversations.

The type of assignment influences the type of argumentation structure used by students. They might be asked to defend or refute a position, present pros and cons of a position, critically evaluate one or more sides of an issue, support and/or develop their own position, reach a new position, solve an existing problem, make a decision, or persuade (Voss & Means 1991). No matter what type of assignment, the student needs to understand the rules, timeline and structure required.

Debate often refers to competitive oral debate with precise rules where students alternate to defend opposite points of view. They operate in a formal structure with points for style, arrangement and delivery of a position within specified time limits. This could be done by individuals debating before the rest of the class or by groups of students taking different sides. Judging by peers or outsiders could be set up in electronic format by asking the judges to submit an electronic ballot to each side at the end as a web conferencing message. The linear order of presentation could structure the debate as in the email debate between fourth and fifth graders on the right of US citizens to protest in time of war (Clark 1992) or it could be set up so that each side could go back and view past statements or examine a claim and its refutation side by side in windows. Related points could be linked within a web conferencing program so readers could see relationships between ideas. Ideally, a web conferencing program would allow hyperlinking or linking to specific sections within a message for greater ease of connecting threads of the debate.

Students required to take both sides of an issue can be encouraged to "see" an opponent's point of view. As students investigate, they generally "discover differences of reasoned, rational opinion on both sides" (Leeman 1987). This type of assignment forces students to confront confusion in the research, become part of the decision-making process and avoid viewing only one side of an issue. In debates conducted via web conferencing, students can easily link to "experts" on a side of the argument, and the opposition can examine the authority or bias of the evidence. Intellectually, such assignments give students experience in the multiplistic and relativistic perceptions of issues sought in Perry's model of intellectual development (Battaglini & Schenkat 1987).

Mimicking a real conference, web conferencing could be used for presentations with a discussant and questions from the audience or an online symposium or panel discussion. The discussant could tie together different presentations, point out similarities and differences, add their own knowledge, or critique the presentations.

In a role play, students are given a specific character role, asked to research that role's position, and present that perspective in an argument. There may be multiple roles in support of a point of view, each with its own perspective. This type of assignment is less structured than a debate, but could develop the same skills. The group could work for consensus or have a panel or body making a decision based on the arguments made.

This role playing could be part of a case study based on a real, relevant situation "complex enough to warrant analysis" (Seaman & Fellenz 1989, 111). Background for the case study could be available electronically to support real-world research and data gathering. Students could go beyond the classroom to contact experts, perhaps even inviting them to join the web conference to provide testimonials or evidence. Others might interview these experts through the web conferencing. The experts might even provide feedback to the group's decisions.

In a jury trial, students may take various prosecution or defense roles, act at judge or jury, or provide testimony as a witness based on research. Teams of lawyers could work together to develop questions for witnesses and provide opening and summary statements. The jury could continue deliberations through web conferencing without the input the lawyers. In a web environment, real lawyers and real judges could be asked to participate. The judge could be called on to moderate throughout. All this could be examined after the fact through the web conference transcripts. Committee hearings could be conducted the same way.

Any of these assignments could be enriched by examination of the transcripts either by participants after the conference is concluded or by other students during the conference. Such conversations remain on the web for an indefinite period of time in the same order they were created. Comments can be appended to any message for clarification, questions, or comment. New messages or specific types of messages can be flagged by different types of icons in some web conferencing programs. Readers can be lead to new, unread messages by date, special icons, or sorting. Some even allow email notification if a new message appears on the conference. Moderators might be asked to pull together comments on a topic or students might be asked to critique the argument from a particular perspective, or explain how they agree or disagree. Students might even be asked to reflect back on changes in their thinking through the discussion.

Web Conferencing Features

To construct and communicate argumentation online, students need to understand both the elements of an argument and methods for developing, communicating and supporting their argument in a web conferencing structure. As the basis of any argument, one must understand the opponent, the audience and the context. "Arguments respond to specific situations: a need is not being met, a person is being treated unfairly, an important concept is misunderstood, an outdated policy needs to be reexamined." (Guilford 1996). Understanding the adversary, audience and context in an online environment may involve formal research, informal, unstructured discussions, electronic introductions, or even online surveys concerning the area of interest. It involves the same basic type of research used in a written or oral presentation, but the information might be accessible in different, often multiple, formats.

Many of the new web conferencing tools offer a forum for creation and support of a logical argument across distances and time and strategies for attaching some kinds of evidence. Various features of web conferencing software can facilitate the argumentation process. Claims can be stated as a new thread or forum in a web conference with various forms of media used to supplement the text proposition and put it in context. Different audiences might be accommodated by providing hyperlinks to additional relevant information or more in depth levels of explanation.

As students develop hunches or good guesses into propositions and move beyond fact or opinion into statements open to debate in a web environment, they need the versatility to develop the scope of their argument in the context of web documents illustrated with multimedia. As they anticipate opposition, expand and communicate their argument, they need to have an environment that enables graphic portrayal of both sides with links to supporting evidence (Buckingham Shum et al 1996). Their audience needs similar mechanisms to contribute feedback.

Gathering, examining, and assessing the relevance and reliability of evidence from a variety of data sources, including observation and formal research can be done either electronically or in traditional formats. Using a variety of software tools, students can collate and organize data for presentation in a argument structure. If working as a group, they may choose to conduct their own private web discussion to select, relate, and organize appropriate grounds. For some, a concept map of related ideas might help in the organization of the argument. Ideally, a web conferencing tool would allow creation and online manipulation of a shared concept map. This same graphical organizer might be used to present the argument and lead the reader through a web of hyperlinked information. Andrews (1993), in a study of 150 Year 8 students, found that planning for argumentation tends to go before writing & most plans were in the form of spider diagrams, numbered notes, or connected boxes. Only 2% of those in his sample took the polar form (e.g., the for-and-against model). This differs from writing narrative, where the students planned during the act of composing. Groups need a way to collaboratively plan arguments across distances in this graphical format.

At the same time, both the small collaborative groups and the larger discussion may require a moderator to keep the group on task, move around mislinked messages, and make connections that seem to have been missed. This might be accomplished by allowing administrator rights to a limited number of participants in a particular forum. Security and privacy of individuals may also be an issue in some discussions. There are web conferences where the participants use aliases rather than actual names to protect their privacy. Only the instructor knows the identify of each participant. Even the instructor may want to use an alias to avoid influencing the conversation with "authoritative" comments and questions.

Individuals or groups can strengthen their reasoning by adding specificity, qualifications, and elaborations to already stated reasons. This can be in the form of additional textual messages or links to graphical, auditory, spatial, or motion evidence. This multimedia evidence can provide a new perspective on a claim. Links to simulations or statistical models that the reader can actually test, allowing readers to modify existing spreadsheets or graphs, or providing connections to experts for further clarification or elaboration are all possible through web conferencing programs. This is true hypermedia, which may incorporate text, images, maps, motion video, and sound linked electronically through multiple routes.

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Reasoning from the evidence, or developing the warrant with backing, requires close examination of the evidence for patterns and relationships, reasoning and analysis, and inference. One of the most difficult things to do in a web conference is to make this warrant evident in a series of connected messages. Other readers may insert comments or questions in the thread of the argument, questioning the warrant or adding opposing viewpoints, depending on the rules of the assignment. An overall outline or graphical portrayal of the parts of the argument would make it easier to see the structure of the warrant and its backing.

Some web conferencing programs allow for the collapse and expansion of the outline of the message thread so that only the top level of the conversation is visible. With appropriately chosen subject headings, this might be used to point out the major evidence. If there were a way to indicate the types of links between these messages, it might facilitate making the warrant. For example, on concept maps, it is often possible to label the links between the nodes, indicating types of relationships. In some web conferencing programs, it is possible to add an icon to each message indicating the type of message, but indicating the type of relationship between messages is generally not possible other than indicating hierarchical relationships.

The structure of the online argument may vary in different web conferencing programs. In some a hierarchical structure is created, in others a linear structure. HyperNews is one program that actually creates both with an outline and inline mode, accommodating both structures. The hierarchical mode allows threading a conversation with each response connected directly to its referent. Many readers prefer a more linear structure as that is how most oral and written communication takes place. Developing and following a hierarchically arranged conversation requires a different type of cognitive organization. One must keep in mind the overall structure of the discussion to place each message in its appropriate context. Highly skilled reasoners tend to reason hierarchically by placing reasons in category form (Voss & Means 1991). With time to reflect on the development of their argument, this should be fairly simple. Use of the ability to view only high level messages would allow this organization to stand out as a type of advanced organizer.

Careful sequencing of an argument requires thought. Analysis of an argument is easier if there is a record of the structure of the argument and associated evidence for concurrent, and subsequent, evaluation and scrutiny. Refutation and response to refutation is more likely if there is opportunity for a delayed response that permits evaluation of evidence, reflection and consultation.

As the students anticipate their opposition, it is possible to link these qualifiers and rebuttals directly to the points they wish to question or refute. This can be done easily in a hierarchical structure. In some programs it is possible to add an icon indicating that the response is a question or disagreement with the previous statement. In the style of a pros and cons chart, students might want to create a matrix of points and counter points viewed side by side, possible if a program allowed parallel threads to be displayed in adjacent windows. Again, a concept map or other graphical portrayal of both sides would allow hyperlinking between related points. With the ability to link out to other sources on the web, experts or their writing could also be brought in to present contradictory evidence, question the accuracy of evidence presented or draw attention to a fallacy of reasoning.

Navigation in web conferences may allow the reader to search for specific points or terms within the messages or the subject headings, jump out to related evidence in a variety of formats, search for additional information on the issue, follow a chain of reasoning set up by the arguer, examine specific types of messages, or view only related messages on a specific point. The students creating the argument can link relevant points together through the placement of the messages, tie evidence together to support a claim through inductive or deductive reasoning through a hierarchical structure, indicate relationships between linked messages through subject headings or icons, add refutation to any opponent's point, and highlight new information through the program's dating or icon system.

Transcripts of these conversations are constantly available to anyone participating in the conference. This allows an individual or group to carefully examine the opposing points of view and critique their own evidence and reasoning. At the end of the discussion, individuals can look back to assess the strength and validity of the reasoning and evidence, their own contribution, changes in their thinking, and their skill in argumentation. Instructor can similarly use these transcripts to gauge student understanding and skill. These discussions can be archived for comparison to subsequent discussions, either by the same group or by a later class.

New forms of community and collaboration are possible in online discourse. The impediment of authority structures can change; students and teachers can become part of an academic discourse where everyone has an equal say. All students have the opportunity to structure and present their thoughts to the group as well as to examine and question the work of others. The roles of both students and teachers can change. Students can become both publishers and critics. They may be asked to do more than simply present a summary of their findings, and instead defend their claim or thesis to others. Their peers may be asked to do more than simply listen and add a few polite comments, and instead be prepared to act as discussants. Teachers can act as leaders, facilitators, moderators, or observers. The community evaluating the argument can expand; outsiders may join the discussion as experts, mentors, or critics.

For online discussion to support argumentation, students must understand how to create an argument, and respond to critiques or refutations of their work. Equally, as listeners, readers or responders, they must be prepared to evaluate the claims and evidence of others. Regardless of the discipline instructors must structure assignments to require arguments, encourage participation, and move students toward critical thinking. Equally, the technologies used must also support an accessible, free-flowing and coherent discussion.

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